

Remarks

Applicants have reviewed this Application in light of the Final Office Action dated November 13, 2008. Claims 1-39 were pending in the Application and Claims 1-39 are rejected. Applicants respectfully request reconsideration and allowance of all pending claims.

Information Disclosure Statements (IDSs)

Applicants appreciate the Examiner's consideration of the IDSs dated January 9, 2008, January 30, 2008, and March 14, 2008. Although the Examiner notes that the IDS dated March 26, 2008 was considered, Applicants did not receive a copy of the PTO-1449 indicating that the references cited were considered by the Examiner. For the convenience of the Examiner, Applicants enclose a copy of the previously submitted March 26, 2008 IDS and PTO-1449 form. Applicants respectfully request that the Examiner consider the cited references, if not already considered, and provide the appropriate indication that they have been considered by initialing next to the references on the PTO-1449 form.

Section 103 Rejections

The Examiner rejects Claims 1-3, 12-14, 23-25, and 34-36 under 35 U.S.C. § 103(a) as being unpatentable over *Blumrich*, in view of U.S. Publication No. 2002/0062454 issued to Fung ("*Fung*"). The Examiner rejects Claims 4-5, 8-11, 15-16, 19-22, 26-27, and 30-33 under 35 U.S.C. § 103(a) as being unpatentable over *Blumrich*, in view of *Fung*, as applied to Claims 1, 12, and 23 (respectively), and in view of "The Cactus Worm: Experiments with Dynamic Resource Discovery and Allocation in a Grid Environment," by Allen et al. ("*Allen*"). The Examiner rejects Claims 6-7, 17-18, and 28-29 under 35 U.S.C. § 103(a) as being unpatentable over *Blumrich*, in view of *Fung*, in view of *Allen*, as applied to Claims 4, 15, and 26, and in further view of U.S. Publication No. 2003/0217105 issued to Zircher et al. ("*Zircher*"). The Examiner rejects Claims 37-39 under 35 U.S.C. § 103(a) as being unpatentable over *Blumrich*, in view of *Fung*, and in further view of *Official Notice*. Applicants respectfully traverse these rejections.

Claims 1, 12, 23, and 37-39

Applicants respectfully submit that *Blumrich* and the combinations of references proposed by the Examiner fail to disclose, teach, or suggest elements specifically recited in independent Claim 1. For example, Claim 1 recites:

a cluster management engine communicably coupled to the plurality of nodes and operable to dynamically allocate a particular subset of the plurality of nodes to a particular job based on the determined status of each of one or more of the plurality of nodes and execute the job using the particular subset.

The Examiner acknowledges that *Blumrich* does not teach these elements, and instead points to *Fung*, ¶ 0011, lines 10-15 as allegedly teaching these elements. See Final Office Action, p.

3. This portion of *Fung* recites:

Dynamic server power management and optional dynamic workload management for multi-server environments is provided by aspects of the invention. Modular network devices and integrated server system, including modular servers, management units, switches and switching fabrics, modular power supplies and modular fans and a special backplane architecture are provided as well as dynamically reconfigurable multi-purpose modules and servers.

Fung, ¶ 0011, lines 11-18. *Fung* describes a computer system that operates in a low-power consumption manner. See, for example, *Fung*, ¶ 0010, lines 1-14, and ¶ 0033, lines 1-4. *Fung* describes example embodiments for providing server power management, but fails to describe dynamic workload management embodiments. For example, nowhere in the cited portion of *Fung* does *Fung* describe allocating nodes to a particular job “based on the determined status of...the plurality of nodes” as recited in Claim 1. *Fung* also fails to recite “execut[ing] the job using the particular subset” as recited in Claim 1. *Fung* merely states that dynamic workload management may be provided, without describing how nodes are allocated, and without any teaching of “the determined status of each of one or more of the plurality of nodes” as recited in Claim 1. Merely using the phrase “dynamic workload management” does not provide enough detail to reject the specific recitations of Claim 1. *Blumrich* does not cure this deficiency. For at least this reason, Applicants respectfully request allowance of Claim 1 and its dependents.

Similarly, Claim 12 recites “dynamically allocating a particular subset of the plurality of nodes to a particular job based on the determined status of each of one or more of the plurality of nodes.” Claim 23 recites a management node “communicably coupled to the plurality of computing nodes and operable to dynamically allocate a particular subset of the plurality of computing nodes to a particular job based on the determined status of each of one

or more of the plurality of computing nodes and execute the job using the particular subset.” Claim 37 recites “a cluster management engine communicably coupled to the plurality of nodes and operable to dynamically allocate a particular subset of the plurality of nodes to a particular job based on the determined status of each of one or more of the plurality of nodes and execute the job using the particular subset.” Claim 38 recites “dynamically allocating a particular subset of the plurality of nodes to a particular job based on the determined status of each of one or more of the plurality of nodes” and “executing the job using the particular subset.” Claim 39 recites a management node “communicably coupled to the plurality of computing nodes and operable to dynamically allocate a particular subset of the plurality of computing nodes to a particular job based on the determined status of each of one or more of the plurality of computing nodes and execute the job using the particular subset.” As discussed above with respect to Claim 1, the portions of *Fung* cited by the Examiner fail to disclose, teach, or suggest the claim limitations. *Fung* merely states that dynamic workload management may be provided, without describing how nodes are allocated, and without any mention of “the determined status of each of one or more of the plurality of nodes” as recited in the claims. Neither *Blumrich* nor *Fung*, taken alone or in combination, teach or suggest the claim limitations. Applicants respectfully request allowance of Claims 12, 23, 37-39, and their dependents.

Claims 2, 13, and 24

Applicants respectfully submit that *Blumrich* and the combinations of references proposed by the Examiner fail to disclose, teach, or suggest elements specifically recited in Claim 2. For example, Claim 2 recites:

The software of Claim 1, wherein the cluster management engine is further operable to determine a topology of the plurality of nodes based, at least in part, on the determined status of the nodes.

The Examiner points to *Blumrich*, ¶ 0255 as allegedly teaching this element. See Final Office Action, p. 5. Here, *Blumrich* describes factors that may be used to select either the Torus network or the Tree network:

When mapping collective communications onto the system networks, it must first be decided whether the particular communication is better suited to the Torus network, or to the Tree Network. Factors to consider include the topology of the communication group, the expected bandwidth requirements of the communication, whether or not the communication may take advantage of the “Global Functions” supported by the Tree, and whether the activity on one of the networks at the time may favor using the other to distribute traffic.

Blumrich, ¶ 0255, lines 1-11. The factors described by *Blumrich* fail to teach “determine a topology of the plurality of nodes based, at least in part, on the determined status of the nodes” as recited in Claim 2. *Blumrich* describes factors including topology, bandwidth requirements, taking advantage of “Global Functions,” and which network the activity may favor. *Blumrich* considers these factors and uses them to select one of the predetermined topologies, either the Torus network or the Tree network. Even if one or more of these factors can be considered “the determined status of the nodes,” as recited in Claim 2, *Blumrich* does not “determine a topology of the plurality of nodes based, at least in part, on the determined status of the nodes” as recited in Claim 2. In *Blumrich*, the topology is predetermined, and *Blumrich* merely selects the better-suited topology. For at least this reason, Claim 2 is allowable over the cited references. Applicants respectfully request allowance of Claim 2.

Similarly, Claim 13 recites “determining a topology of the plurality of nodes based, at least in part, on the determined status of the nodes” and Claim 24 recites “wherein the management node is further operable to determine a topology of the plurality of nodes based, at least in part, on receiving the determined status from the computing nodes.” For at least the reasons discussed above with respect to Claim 2, neither *Blumrich* nor *Fung*, taken alone or in combination, teach or suggest the claim limitations. Applicants respectfully request allowance of Claims 2, 13, 24, and their dependents.

Claims 37-39

The Examiner rejects Claims 37-39 under 35 U.S.C. § 103(a) as being unpatentable over *Blumrich*, in view of *Fung*, and in further view of *Official Notice*. The Examiner gives Official Notice that it would have been obvious, at the time of the invention, “to modify the teachings of the combination of *Blumrich* and *Fung* to utilize processors that don’t co-communicate.” See Final Office Action, p. 11. Applicants respectfully traverse these rejections.

For the reasons discussed above with respect to Claims 37, 38, and 39, Claims 37-39 are allowable over the cited references. In addition, Applicants traverse the Official Notice taken by the Examiner.

While in limited circumstances an examiner may take official notice of facts not in the record or rely on “common knowledge” in making a rejection, “such rejections should be judiciously applied.” *See* M.P.E.P. § 2144.03. It is not appropriate for an examiner to take official notice of facts without citing a prior art reference “where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. For example, assertions of technical facts in the areas of esoteric technology or specific knowledge of the prior art must always be supported by citation to some reference work recognized as standard in the pertinent art.” *Id.* (citing *In re Ahlert*, 165 U.S.P.Q. 418, 420-21 (C.C.P.A. 1970)). To the extent that the Examiner maintains this rejection based on “Official Notice,” “well-known art,” “common knowledge,” or other information within the Examiner’s personal knowledge, Applicants respectfully request that the Examiner cite a reference as documentary evidence in support of this position or provide an affidavit in accordance with M.P.E.P. § 2144.03 and 37 C.F.R. § 1.107.

Specifically, the Examiner states, “the purpose of multi-processing is to improve the efficiency of processing tasks and therefore, not having the two processors communicate would require a third authority to designate the tasks, just increasing overhead of the system and therefore, it would have been obvious to a person of ordinary skill in the art, at the time of the invention, to modify the teachings of the combination of *Blumrich* and *Fung* to utilize processors that don’t co-communicate.” *See* Final Office Action, page 11. Applicants disagree because “increasing overhead of the system” is a reason that a person of ordinary skill in the art would **not** include a central authority, and would instead use processors that communicate via either second processor on the particular second card. Applicants further request that the Examiner produce a reference in support of his position pursuant to MPEP § 2144.03.


Conclusion

For at least the foregoing reasons, Applicants respectfully request allowance of all pending claims.

If a telephone conference would advance prosecution of the Application, the Examiner may call Samir A. Bhavsar, Attorney for Applicants, at 214.953.6581.

Although Applicants believe no fee is due, the Commissioner is hereby authorized to charge any fee or credit any overpayment to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,
BAKER BOTTS L.L.P.
Attorneys for Applicants


Samir A. Bhavsar
Reg. No. 41,617

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CORRESPONDENCE ADDRESS:

Customer Number

45507